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75. Proposed by J. A. CALDERHEAD, M. Sc., Professor of Mathematics in Curry University, Pittsburg, Pennsylvania.

If 24 men, in 15 days of 12 hours each, dig a trench 300 yards long, 5 yards wide, 6 feet deep for 540 five-cent loaves when flour is $8 a barrel; what is flour worth a barrel when 45 men, working $5\frac{1}{3}$ days of ten hours each, dig a trench 125 yards long, 5 yards wide, 8 feet deep for 320 four-cent loaves? *Solve by proportion.*

Solution by G. B. M. ZERR, A. M., Ph. D., Tsxarkana, Arkansas, and C. A. JONES, Terrence, Miss.

The price of flour is an inverse ratio, hence using the *cause* and *effect* process we get at once

$$\left\{\begin{matrix}24\\15\\12\\540\\5\end{matrix}\right\}:\left\{\begin{matrix}300\\5\\6\\(?)\end{matrix}\right\}::\left\{\begin{matrix}45\\5\frac{1}{3}\\10\\320\\4\end{matrix}\right\}:\left\{\begin{matrix}125\\5\\8\\8\end{matrix}\right\}$$

$$\therefore\ (?)=\frac{24\times15\times12\times540\times5\times125\times5\times8\times8\times3}{300\times5\times6\times45\times16\times10\times320\times4}=16\tfrac{7}{8}.$$

$\therefore$ Flour is worth \$16.87½ per barrel.

76. Proposed by E. W. MORRELL, Professor of Mathematics in Montpelier Seminary, Montpelier, Vermont.

An eastern nobleman willed his entire estate to his three sons on the condition that the oldest should have one-half, the next one-third, and the youngest one-ninth. His estate, on inventory, was found to consist of 17 elephants. What should be the share of each?

Solution by FREDERIC R. HONEY, Ph. B., New Haven, Connecticut, and CHAS. C. CROSS, Laytonsville, Maryland.

If the will was obeyed literally the eldest son's share was $\frac{17}{2}$ elephants; the second son's $\frac{17}{3}$; and the youngest's $\frac{17}{9}$, making a total of $\frac{17}{2}+\frac{17}{3}+\frac{17}{9}=16\frac{1}{18}$ elephants. This would leave $\frac{17}{18}$ of an elephant.

The following solution would be satisfactory:

We have $\frac{1}{2}+\frac{1}{3}+\frac{1}{9}=\frac{17}{18}$ as the denominator.

First son receives $\dfrac{\frac{1}{2}}{\frac{17}{18}}=\frac{1}{2}\times\frac{18}{17}=\frac{9}{17}$.

Second son receives $\dfrac{\frac{1}{3}}{\frac{17}{18}}=\frac{1}{3}\times\frac{18}{17}=\frac{6}{17}$.

Third son receives $\dfrac{\frac{1}{9}}{\frac{17}{18}}=\frac{1}{9}\times\frac{18}{17}=\frac{2}{17}$.

Since the estate consisted of 17 elephants, $\therefore$ the first son got $\frac{9}{17}$ of $17=9$ elephants; and the second son got $\frac{6}{17}$ of $17=6$ elephants; and the third son got $\frac{2}{17}$ of $17=2$ elephants.

Remarks by G. B. M. ZERR, A. M., Ph. D., Texarkana, Arkansas.

As 17 is prime, the elephants should be divided as near the proportion as possible. $\therefore$ oldest should have 9, next, 6, and the youngest, 2.